

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method, comprising:

positioning a die with a perimeter and a center adjacent to a connection material that is adjacent to a substrate, wherein underfill material substantially fills a volume between the die and the substrate not filled by the connection material;
and

applying heat to the die, wherein more heat is applied to the perimeter of the die than to the center of the die, and wherein the underfill material substantially fills the volume between the die and the substrate prior to the applying the heat to the die.

2. (currently amended) A method, comprising:

positioning a die with a perimeter and a center adjacent to a connection material that is adjacent to a substrate;

applying heat to the die, wherein more heat is applied to the perimeter of the die than to the center of the die; and

~~The method of claim 1,~~ wherein more heat is applied to the perimeter of the die than to the center to raise the center of the die to a temperature in a range from about 200 degrees Celsius to about 340 degrees Celsius and to raise the perimeter of the die to a temperature in a range from about 200 degrees Celsius to about 340 degrees Celsius.

3. (original) The method of claim 1, wherein more heat is applied to the perimeter of the die than to the center to make a temperature at the center of the die substantially equal to a temperature at the perimeter of the die.

4. (original) The method of claim 1, wherein the connection material comprises epoxy.

5. (original) The method of claim 1, wherein a heat nozzle applies the heat.

6. (currently amended) A method, comprising:

positioning a die with a perimeter and a center adjacent to a connection material that is adjacent to a substrate;

applying heat to the die, wherein more heat is applied to the perimeter of the die than to the center of the die;

wherein a heat nozzle applies the heat; and

~~The method of claim 5,~~ wherein the heat nozzle comprises a peripheral section that comprises a first material with a first thermal conductivity, and a middle section that comprises a second material with a second thermal conductivity lower than the first thermal conductivity.

7. (currently amended) A method, comprising:

positioning a die with a perimeter and a center adjacent to a connection material that is adjacent to a substrate;

applying heat to the die, wherein more heat is applied to the perimeter of the die than to the center of the die;

wherein a heat nozzle applies the heat; and

~~The method of claim 5~~, wherein the heat nozzle comprises a peripheral section that contacts the die and a middle section that does not contact the die.

8. (original) The method of claim 7, wherein the middle section comprises a substantially spherical cavity.

9. (original) The method of claim 1, wherein a heating block generates the heat.

10. (withdrawn) The method of claim 9, wherein the heating block comprises a peripheral section and a middle section, and the peripheral section of the heating block generates more heat than the middle section of the heating block.

11. (withdrawn) The method of claim 10, wherein current traveling through heating elements within the heating block generates the heat, and the peripheral section of the heating block comprises more heating elements per unit volume than the middle section of the heating block.

12. (currently amended) A method, comprising:

positioning a heat nozzle adjacent a surface of a die;

heating the heat nozzle;

transferring heat from the heat nozzle to the die, wherein more heat per unit area is transferred to an edge portion of the die than to a middle portion of the die, the heat causing a plurality of connectors between the die and a substrate to melt;
and

cooling the die and substrate, wherein cooling the die and substrate allows the connectors to solidify and couple the die to the substrate.

13. (withdrawn) The method of claim 12, wherein heating the heat nozzle comprises transferring more heat per unit area from a heating block to an edge portion of the heat nozzle than to a middle portion of the heat nozzle.

14. (original) The method of claim 12, wherein heating the heat nozzle comprises transferring substantially the same amount of heat per unit area from a heating block to an edge portion of the heat nozzle as to a middle portion of the heat nozzle.

15. (currently amended) A method, comprising:

positioning a heat nozzle adjacent a surface of a die;

heating the heat nozzle;

transferring heat from the heat nozzle to the die, wherein more heat per unit area is transferred to an edge portion of the die than to a middle portion of the die;

wherein heating the heat nozzle comprises transferring substantially the same amount of heat per unit area from a heating block to an edge portion of the heat nozzle as to a middle portion of the heat nozzle; and

~~The method of claim 14~~, wherein the heat nozzle comprises a peripheral section that comprises a first material with a first thermal conductivity, and a middle section that comprises a second material with a second thermal conductivity lower than the first thermal conductivity.

16. (currently amended) A method, comprising:

positioning a heat nozzle adjacent a surface of a die;

heating the heat nozzle;

transferring heat from the heat nozzle to the die, wherein more heat per unit area is transferred to an edge portion of the die than to a middle portion of the die;

wherein heating the heat nozzle comprises transferring substantially the same amount of heat per unit area from a heating block to an edge portion of the heat nozzle as to a middle portion of the heat nozzle; and

~~The method of claim 14~~, wherein the heat nozzle comprises a peripheral section that contacts the die and a middle section that does not contact the die.

17. (currently amended) A device, comprising:

a heater ~~having a heating block portion and a heat nozzle portion~~;

a positioner, to position a die adjacent to the heater; and

wherein the heater is adapted to apply to a substantially planar surface more heat at a peripheral portion ~~of the heat nozzle~~ than at a middle portion ~~of the heat nozzle~~ and to cause temperatures around substantially an entire perimeter of the planar surface and a temperature at the middle portion of the planar surface to be closer to equal than if the same amount of heat were applied to both the peripheral and middle portions.

18. (currently amended) A device, comprising:

a heater;

a positioner, to position a die adjacent to the heater;

wherein the heater is adapted to apply to a substantially planar surface more heat at a peripheral portion of the surface than at a middle portion of the surface; and

~~The device of claim 17~~, wherein the heater ~~heat nozzle portion~~ comprises a peripheral section that comprises a first material with a first thermal conductivity, and a middle section that comprises a second material with a second thermal conductivity lower than the first thermal conductivity.

19. (currently amended) A device, comprising:

a heater;

a positioner, to position a die adjacent to the heater;

wherein the heater is adapted to apply to a substantially planar surface more heat at a peripheral portion of the surface than at a middle portion of the surface; and

~~The device of claim 17,~~ wherein the heater ~~heat nozzle portion~~ comprises a peripheral section to contact the substantially planar surface and a middle section that is adapted to not contact the substantially planar surface.

20. (original) The device of claim 19, wherein the middle section comprises a substantially spherical cavity.

21. (currently amended) The device of claim 17, wherein the heater comprises a heating block portion and a heat nozzle portion, and the heating block portion generates the heat.

22. (withdrawn) The device of claim 21, wherein the heating block portion comprises a peripheral section and a middle section, and the peripheral section of the heating block portion generates more heat than the middle section of the heating block portion.

23. (withdrawn) The device of claim 22, wherein current traveling through heating elements within the heating block portion generates the heat, and the peripheral section of the heating block portion comprises more heating elements per unit volume than the middle section of the heating block.

24. (new) The method of claim 1, wherein applying heat to the die causes a plurality of connectors between the die and a substrate to melt, the plurality of connectors comprising the connection material and further comprising:

cooling the die and substrate, wherein cooling the die and substrate allows the connectors to cool and couple the die to the substrate.

25. (new) The method of claim 12, wherein, prior to heating the heat nozzle, underfill material substantially fills a volume between the die and the substrate not filled by the connectors.